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Crocodile Hunter

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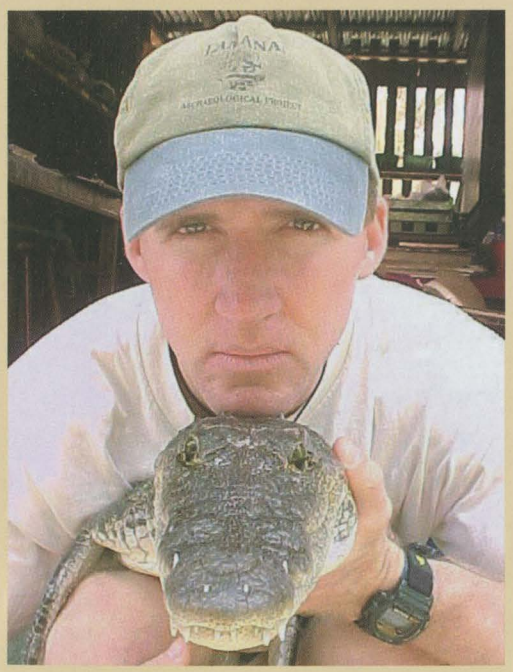
For researcher Thomas Rainwater, catching crocs is all in a day's work.

Crocodile Hunter



Thomas Rainwater '89 has caught approximately 650 crocodiles in the wilds of Belize.

As the clock strikes 10 at Lamanai Field Research Center, two men head toward the beach.

Finding the right boat for the task ahead, they cast off into the night. Their waterway: the New River Lagoon, the largest freshwater body in the Central American country of Belize. Their equipment: spotlights and headlamps, a snare made of cable and rope, a pole, some duct tape. Their demeanor: watchful and alert.

Their target: crocodiles.

As they make their way, they train their spotlights on the water's surface, focusing particularly on tree limbs, lily pads and grasses along the banks of the lagoons, looking for the telltale "eye shine" that indicates the presence of a croc. The animals have a special layer of cells in the backs of their eyes that allow them to see in the dark — and that reflect a bright reddish glow when caught in the light. Thus, the hunter's maxim: "Terror Has Red Eyes."

Suddenly, they get a hit: eye shine 100 meters to the right. Slowly the skipper maneuvers the boat toward the sighting, being as quiet as possible to avoid frightening the traditionally skittish animal. As they approach, his friend crouches on the bow, his snare — a wire cable loop, attached to a long rope and lightly taped to the end of a pole — at the ready.

Carefully he drops the snare over the croc's head, then pulls it tight. Acting much like a slip-knot, it locks into place, and the croc begins to thrash violently in an effort to escape. Its exertions jerk the snare free from the pole.

What's left is a croc on a rope.

While the croc struggles, its antagonists play it as they would a fish. Because most crocodiles have limited stamina, the battle usually lasts little more than a few minutes.

By Jim Stewart

As the animal exhausts itself and becomes more subdued, they pull it toward the boat and prepare for the next, vitally important phase of the operation: securing the jaws. Depending on the crocodile's size and position in the water, the hunters may use rope, another snare or even their hands.

They then lift the croc into the boat, using duct tape to further hold the jaws, and blindfold the animal to reduce its anxiety. To take it home, they place it in a holding bag or in the bottom of the boat.

With the first captive in hand, the crew moves on. Once their evening's work is completed — they may hunt all night, or for only a few hours — they return to their base at the research facility. There they sequester their catch in a holding center until the next morning, when they return to take samples and measurements. Within 12 hours, the animals are taken back to the wild and released in the same spot they were found — perhaps one day to go through the same experience again.

For Thomas Rainwater, this scenario is business as usual. A 1989 Furman graduate and doctoral candidate at Texas Tech University, he has spent portions of the last four years in Belize, researching the endangered Morelet's crocodile as part of his dissertation project in environmental toxicology.

His tests on the animals (he takes samples of their blood and fat), combined with a study of their eggs, nest material and sediment samples from the environment, are part of an effort to determine the crocodiles' exposure and reaction to contaminants such as DDT and other pesticides. Rainwater says recent research suggests that crocodilians (crocodiles, alligators, caimans, gharials) frequently encounter contaminants through their food, and that the chemicals may affect their ability to reproduce.

"Many chemicals like DDT have been banned in more industrialized countries, but until recently they were still legally used in Belize to control agricultural and disease-carrying pests, such as malaria-infected mosquitoes," he says. "Chemicals like DDT can persist in the environment for decades, so even if a certain pesticide was last used 20 or 30 years ago, it has the potential to affect the current inhabitants of the area, both wildlife and people."

Crocodiles and their comrades in the Order Crocodylia, Rainwater says, are "excellent indicators of environmental contamination and ecosystem health." As predators that reside at the top of the food chain, they tend to accumulate environmental contaminants and are often more sensitive to these chemicals than are birds, mammals or fish. Crocs eat virtually anything, live for a long time (50 years or

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more) and typically remain in the same general area throughout their lives. Rainwater says that if a crocodile contains contaminants, chances are it was exposed in the area that it was captured.

Since beginning his annual six-month stints in Belize in 1997 — a total of four sessions in the field, after each of which he returned to Texas Tech to analyze his data — Rainwater says that he and his associates have inspected hundreds of infertile crocodile eggs and found pesticide residue in virtually every one. They have also discovered contaminants in sediment and nest samples. The next step, he says, is to analyze the blood and fat samples as well as other data to determine if this exposure is having any effect on the crocs, both at the individual and population levels.

Their research, he believes, could help determine what effect environmental contaminants might have on an overall ecosystem and what the implications might be for humans and other animals residing in the same area.

Eventually, Rainwater says, he would like to put what he has learned to use in a career that combines teaching and research. His goal is "to apply toxicological and ecological principles as tools in addressing wildlife conservation issues. If I teach, I'll train students to design and conduct research that will be applicable to real world problems related to the environment and wildlife conservation."

He hopes, too, that his research can help develop ways to limit chemical exposure both in industrialized countries and in developing areas, where, he says, "Chemical use regulations are scant or more difficult to enforce."

Of course, the question begs to be asked: Why crocodiles?

The answer goes back to Rainwater's formative years in Florence, S.C., the heart of Pee Dee country, with its ample supply of swamps and undeveloped land. "Ever since I can remember," he says, "I've been fascinated with wildlife, particularly reptiles. I think this is actually pretty common among children growing up in rural areas. I just never outgrew it."

He claims to have owned as many as seven snakes at one time, and he and his friends knew the swamps near his neighborhood "like the backs of our hands. We'd spend the summers exploring and searching for animals, and we'd buy baby pools at K-mart for 50 cents each and use them to hold turtles and toads."

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His parents were good role models, encouraging their son's activities but insisting that he return the animals to the wild shortly after capture. While his father, James (Furman '61), shared his interest in reptiles, mom Anna Rose "displayed a more tolerable indifference."

Yet she was willing to go the extra mile on her son's behalf. After K-mart refused to sell her any more hamsters when it learned they were being served to his boa constrictor for lunch, she would go into the store incognito to keep the snake and her son happy. No doubt Thomas inherited some of her guile and cunning, traits that come in handy in the bush.

As he grew older his interests expanded to conservation and the environment, but reptiles remained a source of fascination. He majored in biology at Furman, where he earned the nickname "Chief" and, he confesses, was not the most focused of students.

Although many of his fellow 1989 biology graduates immediately pursued advanced study, Rainwater decided to take a year off, "basically to avoid making a decision on what to do next." While traveling and working odd jobs, he developed a strong interest in environmental pollution and its effect on wildlife and their habitats. In 1990, he enrolled at Clemson University to pursue a master's degree in environmental toxicology.

His thesis project took him to Kiawah Island, S.C., where for two summers he studied the effects of turfgrass pesticides and other chemicals on free-ranging birds at the Ocean Course, site of the 1991 Ryder Cup. Still, he says, "I probably spent a third of my time observing and photographing the many alligators that inhabited the course's creeks and ponds and basked along the edge of the fairways." When the Kiawah research ended in the summer of 1993, he was determined to develop a project to study the effects of environmental contaminants on alligators or crocodiles.

Master's degree in hand, he spent the fall of 1994 in Princeton, N.J., as an intern at American Cyanamid Company, an agricultural chemical company. There, he gained new insights into the relationship between industry, government, academia and the public in regard to the production, use and application of agricultural chemicals.

Top: Lamanai Outpost Lodge and Lamanai Field Research Center are located in north-central Belize. For vacationers, the resort offers a variety of amenities and programs. For researchers, it provides facilities rarely found in such a remote area. Visit the Web site at www.lamanai.com.

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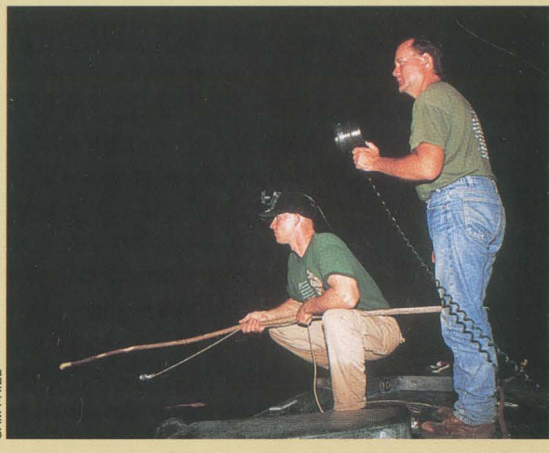


SAM FRIED

DEBBIE GREEN

SAM FRIED

He turned to see the mother croc just a few feet away, a look of pure hatred in her eyes. Suddenly she bolted toward him, jaws wide open.

He returned to Clemson in January 1995 to work on his Ph.D. under Scott McMurry. Soon he met Steve Platt, another doctoral candidate, who regaled Rainwater with tales of his work in Belize, where he was studying the Morelet's crocodile. "He shared these incredible stories about his adventures with crocs, malaria, roadside bandits and everything in between," says Rainwater. Platt invited him to Belize, and in July 1995 Rainwater and McMurry traveled there to catch crocs and collect eggs.

They also visited the Lamanai Outpost Lodge and Lamanai Field Research Center, where friends of Platt suggested they begin a long-term research project. When they brought home 31 eggs and discovered that all of them contained DDT, mercury or other contaminants, they realized they wanted to find out more.

Funding, however, was a problem, so in early 1997 they applied to the Environmental Protection Agency for a research grant. The three-year proposal was approved in November of that year — which was fortunate, because Rainwater had already returned to Belize and was well into his "perfect project."

When McMurry took a position at Texas Tech in the fall of 1997, Rainwater and the grant money joined him. Their final EPA-funded stint in Belize ended last October.

Most people, says Rainwater, think that hunting crocodiles ranks high on the Rambo scale. This sentiment seems to catch him by surprise.

"Although it can be very dangerous, it's like anything else," he says. "If you're careful, alert and take your time, you rarely run into problems."

But you tend to remember when you do.

Take, for example, one afternoon in July 1995. While plundering a crocodile nest in search of eggs, Rainwater heard Platt's bush dog, a notorious pooch named Trouble, issue a strange growl. He turned to see the mother croc just a few feet away, a look of pure hatred in her eyes. Suddenly she bolted toward him, jaws wide open. Fortunately, she got tangled up in the brush surrounding the nest, just long enough for Rainwater to escape.

End of story? Hardly.

As the croc returned to her nest, hissing and displaying plenty of attitude, the persistent researchers regrouped — and proceeded to try to nudge her away with a stick. No dice. "She pretty much destroyed that stick," Rainwater says.

So he, Platt and McMurry hatched a new plan. Platt drew the short straw and was assigned to sneak up from behind and grab the croc around the head. Rainwater then raced forward and tied the six-foot beast's jaws shut with his bandana. After a 10-minute wrestling match, she was spent. "We carefully moved her aside and went about checking the nest," he says. "When we were finished, we untied her jaws and left her there." All in a day's work.

Once, Rainwater and Platt snared a crocodile that was too large for their canoe. They moved toward shore, and Platt disembarked to begin working the croc from there. As the animal thrashed against the boat, Rainwater decided to join his friend — except that when he stepped into the shallow water, he sank to his waist in mud. Unable to move, he watched as the snare rope and churning water began

Thomas Rainwater and colleague Steve Platt search for a crocodile's telltale "eye shine." Crocs put up a mighty struggle when first captured, but even larger ones, like this 8.5-foot specimen, tend to tire quickly. Once they calm down and he has them on board his boat, Rainwater examines them carefully and, on occasion, exchanges a few pleasantries.

STEVE PLATT

STEVE PLATT

THOMAS RAINWATER

moving toward him. "I guess adrenaline kicked in," he says, "because I quickly freed myself and crawled across the muddy shallows to shore as the croc thrashed her way past where I'd been. I don't think she was after me, but she would've certainly latched on to me if I had been in her way."

And there was the time when, after investigating a nest on a small island near a cattle ranch, Rainwater discovered that his boat had floated 100 meters offshore — and was slipping further away by the minute. There was only one thing to do: swim for the boat, which wouldn't have been so daunting had he not earlier seen several large crocodiles near the shore, feasting on dead cattle.

"Many unpleasant thoughts crossed my mind," Rainwater recalls, "such as the underwater silhouette of the girl swimming in the opening scene of *Jaws*. I finally made it to the canoe. Then I had to swim back, dragging the canoe, because any attempt to board it would have capsized it." Ever since, he has made sure to secure his boat.

Rainwater has even developed a longstanding relationship with one croc. It began early one morning in September 1998, when he and a friend were collecting newly hatched crocodiles, all of which were making plenty of noise. Soon a huge croc, approximately 10 feet long, appeared and approached the canoe. Rainwater and friend began paddling away; the croc followed, then disappeared when they reached a shallow area.

After searching for more hatchlings, the researchers started for home — only to have the crocodile surface, lunge and bite their canoe as they passed.

"Fortunately for us, he let go," Rainwater says. "Otherwise we likely would have capsized."

Round 2 occurred a few weeks later, in the same area, this time from a small fiberglass boat with an electric (trolling) motor. As Rainwater pulled into the lagoon, the croc appeared and began swimming toward the boat.

"Most crocs are very shy and will take off at the sound of a boat or human voice," he says. "This one was uncharacteristically bold." Rainwater was able to hold him off with a paddle, but the croc never backed down.

During the course of the uncharacteristically long battle with the feisty animal, the boat began to take on water — the result, they discovered, of a croc bite.

So, what do good researchers do when faced with this situation? They catch the croc. "I was curious," Rainwater explains. "This was either a huge female or a male protecting its young, even though few male crocodilians are known to protect hatchlings."

They returned a few nights later. This time they snared their prey, only to spend the next three hours being dragged around the lagoon, their electric motor no match for the croc's strength. During the course of the uncharacteristically long battle, the boat began to take on water — the result, they discovered, of a croc bite. Eventually they made their way to a shallow area and landed the animal, with the help of three people, three snares and about half a roll of duct tape. After this skirmish, Rainwater dubbed the feisty croc Ebenezer.

"I still see him when I go back to the lagoon," says Rainwater, "and many times I've had to paddle away." In their latest meeting, in September, Ebenezer attacked the motor and bit the back of the boat.

Belize lends itself to plenty of encounters with other animals besides crocodiles. Rainwater has had a particularly nasty experience with botfly larvae, battled Africanized killer bees, been chased from his room by army ants, and tangled with tarantulas, bats and frogs. A scorpion stung him one morning as he stepped out of bed, but he says, "I was actually relieved at the time, because I had a small rattlesnake in a bag and my first thought was that the snake had gotten loose."

Still, the critters are what he's there for, and he says he couldn't have better headquarters than the Lamanai Outpost Lodge, a resort that he describes as "magnificent" not just for researchers, but for lovers of wildlife and the outdoors. The owners of the lodge, Colin, Mark and Monique Howells, founded the Lamanai Field Research Center in 1992. Ever since they have housed and fed researchers, although the LFRC will soon have its own accommodations.

The LOL/LFRC is about 20 miles inland from the Caribbean Sea in north-central Belize. It is most easily accessible by boat or plane, although driving is an option.

For researchers, the facilities are outstanding. Food and service are excellent, and the rooms have electricity, ceiling fans, screened windows, hot and cold water and flush toilets, all of which are rare for such a remote location. The

Top, from left: Rainwater and fellow researcher Scott McMurry collect eggs; a mother guards her nest; the two unbanded Morelet's crocodile eggs are infertile; a hatchling emerges to greet the world; Rainwater and friends with his largest catch, a 10-foot croc.

AMANDA COLUMBO

ARABA OGLESBY

Rainwater has had a particularly nasty experience with botfly larvae, battled Africanized killer bees, been chased from his room by army ants, and tangled with tarantulas, bats, frogs and a scorpion.

accommodations, says Rainwater, allow him to "spend less time worrying about logistics and subsistence and more time on my work."

And his affiliation with the ecotourist lodge lets him share his love for nature and the environment with others. "One of the best parts about Lamanai is the opportunity to take folks out and show them things they normally wouldn't see if they went by themselves or on a guided tour," he says. "Most people have never seen crocodiles in the wild, much less had the chance to hold or touch one.

"I like to show people firsthand that crocs, like snakes and other reptiles, aren't repulsive beasts but are in fact quite beautiful. I also stress that all wild animals should be respected."

He says that tourists frequently become unnerved when he first snares a croc and it begins thrashing and snapping, but after it's secured on the boat he encourages them to touch and even hold it. Often the most reticent passenger will, by the end of the trip, ask to help carry the croc back to the lab — and assist with collecting data the next day.

"We've taken out hundreds of guests, both adults and kids, and I've never known one to leave the dock at the end of the night not fascinated by crocs," he says. "That makes what we do that much more worthwhile."

Yes, Thomas Rainwater has seen Steve Irwin, television's "Crocodile Hunter." And yes, he thinks he's fun to watch. "Nothing like the potential danger of being hurt or killed to attract an audience," he says. "There's NASCAR, professional wrestling, and now there's the Crocodile Hunter."

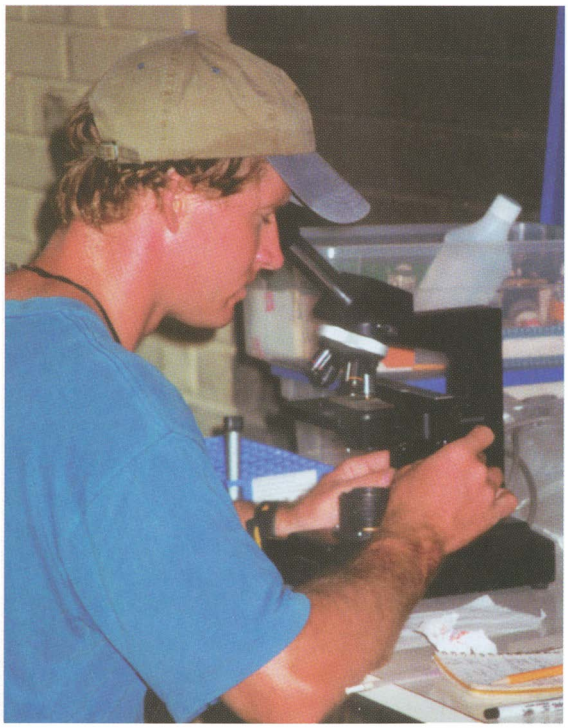
He credits Irwin with providing positive press for reptiles and other maligned wildlife, and with presenting a strong conservation message. He does question the Australian's "cavalier" approach to handling animals, "especially venomous snakes, considering how impressionable children are."

"But whether you like him or not, the bottom line is he's an entertainer and generates an audience," says Rainwater. "I'm only like him in that I work with crocodiles and other wildlife and am highly enthusiastic about it. I've leaped from a boat to catch a croc and handled venomous snakes, but those occasions are few and far between. Plus, I don't get the big bucks for it."

Instead, he gets satisfaction.

For now, Rainwater is back at Texas Tech, analyzing his findings and working on his dissertation. He plans eventually to return to Belize to pursue other projects, but when is an open question.

"At this point," he says, "all I can say is that I'm not ready for an office job. There are just too many environmental toxicology and wildlife conservation issues to address in developing countries, and I want to be there in the thick of it."



BETTY ROWE

Thomas Rainwater believes his research with Morelet's crocodiles could help determine what effect environmental contaminants might have on an overall ecosystem and what the implications could be for humans and other animals that live in the same area.